other Bodies as much rarer as he pleaſes, ſo that Light may find a ready paſſage through tranſparent ſubſtances.

PROP. IX.

Bodies reflect and refract Light by one and the ſame power variouſly exerciſed in various circumſtances.

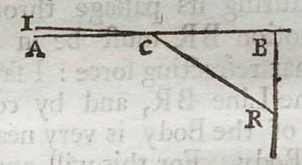
This appears by ſeveral Conſiderations. Firſt, Becauſe when Light goes out of Glaſs into Air, as obliquely as it can poſſibly do, if its incidence be made ſtill more oblique, it becomes totally reflected. For the power of the Glaſs after it has refracted the Light as obliquely as is poſſible if the incidence be ſtill made more oblique, becomes too ſtrong to let any of its rays go through, and by conſequence cauſes total reflexions. Secondly, Becauſe Light is alternately reflected and tranſmitted by thin Plates of Glaſs for many ſucceſſions accordingly, as the thickneſs of the Plate increaſes in an arithmetical Progreſſion. For here the thickneſs of the Glaſs determines whether that power by which Glaſs acts upon Light ſhall cauſe it to be reflected, or ſuffer it to be tranſmitted. And, Thirdly, becauſe thoſe ſurfaces of tranſparent Bodies which have the greateſt refracting power, reflect the greateſt quantity of Light, as was ſhewed in the firſt Propoſition.

PROP. X.

If Light be ſwifter in Bodies than in Vacuo in the proportion of the Sines which meaſure the refraction of the Bodies, the forces of the Bodies to reflect and refract Light, are

are very nearly proportional to the denſities of the ſame Bodies, excepting that unctuous and ſulphureous Bodies refract more than others of this ſame denſity.

Let AB repreſent the refracting plane ſurface of any Body, and IC a ray incident very obliquely upon the



Body in C, ſo that the Angle ACI may be infinitely little, and let CR be the refracted ray. From a given point B perpendicular to the refracting ſurface erect BR meeting with the refracted ray CR in R, and if CR repreſent the motion of the refracted ray, and this motion be diſtinguiſhed into two motions CB and BR, whereof CB is a parallel to the refracting plane, and BR perpendicular to it: CB ſhall repreſent the motion of the incident ray, and BR the motion generated by the refraction, as Opticians have of late explained.

Now if any body or thing in moving through any ſpace of a giving breadth terminated on both ſides by two parallel plains, be urged forward in all parts of that ſpace by forces tending directly forwards towards the laſt plain, and before its incidence on the firſt plane, had no motion towards it, or but an infinitly little one; and if the forces in all parts of that ſpace, between the planes be at equal diſtances from the planes equal to one another, but at ſeveral diſtances be bigger or leſs in any given proportion, the motion generated by the forces in the whole paſſage of the body or thing through